Objections to Claims 1, 4, 13 and 14:

The Office Action objected to claims 1, 4, 13 and 14 for minor informalities. Accordingly, the Applicants have amended the claims to comply with Examiner's requests. The Applicants submit that no new matter has been added and that the claim amendments were made merely to correct informalities and therefore request that the objections be withdrawn

. Therefore, Applicants respectfully request that rejection to the claims be withdrawn and the same be passed to issuance.

The Applicants have reviewed the prior art made of record and do not believe that any of the references affect the patentability of the present invention.

The amendments herein are not intended to and should not be construed to have been made for any reasons related to patentability of the claims. Attached hereto is a marked-up version of the changes made to the claims, specification and drawings by the current amendment. The attachment is captioned "Version With Markings To Show Changes Made."

In view of the foregoing amendments and remarks, early favorable action is solicited.

The Commissioner is hereby authorized to charge any additional fees that may be required for this response, or credit any overpayment to Deposit Account No. 50-1628.

In the event that an extension of time may be required in addition to that requested hereinabove, the Commissioner is requested to grant a petition for that extension of time that is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No. 50-1628.

If the Examiner determines that anything is necessary to place the application in better condition for allowance which Examiner believes can be handled via telephone, Applicant respectfully requests that Examiner contact the undersigned attorney at (212) 632-8435. The undersigned may also be contacted by e-mail at mwaldbaum@salans.com.

Respectfully submitted,

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Attorney for Applicant(s)

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

The Applicants submit this amendment in response to the request to provide a clean version and a marked up version of the amended sentences of the claims, specification, and drawings, provided hereinabove. Changes have been indicated as follows: underlined words are added and bracketed words are deleted.

In the Claims:

1. (Twice Amended) A filter, comprising:

a block of dielectric material having a top surface, a bottom surface, two opposing first side-walls connecting said top surface to said bottom surface along the width of said block and two opposing second side-walls connecting said top surface to said bottom surface along the height of said block;

two input/output pads on one of said first side walls;

at least three holes extending along the width of said block and extending through said block from said top surface to said bottom surface, wherein at least one of said at least three holes which is located at the end of the at least three holes is offset, or off a line bisecting the remaining [two] holes of the at least three holes;

conductive material substantially covering said bottom surface said first and second side-wall surfaces and said inner surfaces of said at least three holes;

[said] each of said holes have patterns of conductive material on said top surface, surrounding said holes;

said center of said offset hole is a distance Y1 from a center of a hole adjacent to the offset hole, said distance Y1 being perpendicular to the filter's first side walls;

said center of said offset hole is a distance X1, from the center of said adjacent hole, said distance X1 being parallel to the filter's first side walls;

a first pattern of conductive material between said offset hole and the adjacent hole, where said first pattern comprises a first arm of conductive material parallel to an edge of the conductive material of the offset hole and parallel to the filter's first side walls, a second arm of conductive material perpendicular to said first arm of conductive material, and a third arm of conductive material parallel to the first arm of conductive material and perpendicular to the

second arm of conductive material said first pattern of conductive material is connected to the first of said input/output pads on one of said first side walls;

[said offset hole has a pattern of conductive material surrounding said hole,] said edge of said offset hole's pattern of conductive material has a capacitance C2 from the edge of conductive material surrounding the adjacent hole, where C2 is the capacitance between two opposite edges of said offset hole's pattern of conductive material and said adjacent hole's pattern of conductive material;

where said offset hole is next to the first arm of conductive material where a capacitance C1 is provided between the conductive material surrounding said offset hole and the first arm of conductive material[, where C1 is the capacitance between the offset hole's pattern on conductive material and said first pattern of conductive material];

a second pattern conductive material opposite the first pattern of material, where said second pattern has a width, W, and a length, L, said second pattern is connected to the conductive material on one of said first side walls; and

a capacitance C3 which is the capacitance between said pattern of hole adjacent to said offset hole and said first pattern is provided; and

a third pattern of conductive material between a fifth and a sixth hole where said third pattern is connected to said second input/output pad.

4. (Twice Amended) A duplexer filter comprising:

a block of dielectric material having a top surface, a bottom surface, two opposing side-walls connecting said top surface to said bottom surface along the width of said block and two opposing side-walls connecting said top surface to said bottom surface along the height of said block, said block having a higher band and a lower band;

three input/ouput pads on one of said side-walls;

multiple holes spaced along the width of said block and extending through said block from said top surface to said bottom surface, wherein a first hole is located at a first location and where said first [hole's-] hole has a center which is offset or off a line bisecting the remaining holes;

conductive material substantially covering said bottom surface said side-wall surfaces and said inner surfaces of said holes;

said center of said offset hole is a distance Y1 from a center of a hole adjacent to said offset hole, said distance Y1 being perpendicular to the width of the filter's side walls;

said center of said offset hole is a distance X1, from the center of said adjacent hole said distance X1 being parallel to the width of the filter's side walls;

a first pattern of conductive material connected to one of said side walls, where said first pattern is located between said first offset hole and the next adjacent hole to the first offset hole and has a width W and a length L;

a second pattern of conductive material connected to said first input/output pad, where said second pattern is located between a non-offset hole of lower band and the next adjacent non-offset hole of higher band;

where said first offset hole is next to the second pattern of conductive material with a capacitance C1 between the conductive material surrounding said first offset hole and the second pattern of conductive material;

a second capacitance C2 which is the capacitance between the pattern of said next adjacent hole to said first offset hole and said conductive material surrounding said first offset hole; and

a third capacitance C3 which is the capacitance between said second pattern of conductive material and said pattern of said next adjacent hole to said first offset hole.

13. (Twice Amended) The filter of claim 4 where said offset hole has a right and left side with reference to the top surface, and wherein the offset hole is [after] has a line of four holes to the right of said offset hole and four holes to the left said offset hole.

14. (Amended) The filter of claim 4 where there are two offset holes, each of said holes having a right and left side with reference to the top surface, the first offset hole having three holes to the left and [four] three non-offset holes to the right of its location, with said second offset hole to the right of the last of said non-offset holes.

In the Specification:

Please replace the paragraphs indicated with the following rewritten paragraphs:

p. 5, add paragraph under Detailed Description:

In prior art filters, as shown in Fig. 1 and 2, traps 10 are separated from each other a distance equal to D and a distance of 2D is placed between trap holes 12 and the nearest transmission hole 10. The precise distance is a design choice for achieving a specific performance. However, the need for trap holes with their requisite spacing requirements in a filter adds a significant constraint to the degree to which the filter can be made smaller.

p. 5, 1st paragraph under "Detailed Description:"

One embodiment of this invention is a filter with 4 transmission poles and 2 trap resonators (total 6 holes), shown in Figures 4A-4B. Capacitances C1, C2 and C3 are shown in Figure 4B.

p. 6, 3rd full paragraph (Twice Amended):

Fig. 4B shows parameters C1, C2 and C3. C1 is controlled by the distance between pattern 1 [(not shown)] of conductive material for input/output electrode and pattern 3 [(not shown)] of conductive electrode connected to conductive material on the inner surface of hole of Θ1 resonator (Fig. 3), and C3 is controlled by the distance between pattern 1 [(not shown)] and pattern [4 (not shown)] 3 of conductive material connected to conductive material on the inner surface of hole of Θ2 resonator (Fig. 3). C1, C2 and C3 are capacitances of coupling as described above in Figure 4B. Z is an inductive coupling and is controlled by the pattern 2 [(not shown)] of conductive material that is opposed to the pattern 1 [(not shown)] and is connected to the conductive material on the side wall. The relationship of C1, C2 and C3, to each other is as follows, C1>C3>C2.

p. 6, last paragraph:

Figure 5 shows the electrical data of the filters developed by the existing technology and by our new technology along with the requested specification. Although the present invention's filter is smaller, due to the less amount of holes, than currently available filters, its performance matches the electrical performance of larger filters using presently available technology. The electrical performance of the present invention (the filter of Figure [4] 3) is represented by the

rigid lines as [the] is shown in Figure 5. The electrical performance of a prior art filter (the filter of Figure [1] 2) is represented by the broken line as shown in Figure 5.

p. 7, 1st full paragraph (Twice Amended):

We can also apply the concepts of this new filter technology to a duplexer. Figures 7A-7B is an embodiment of a printed pattern duplexer of the present invention. Figure 6 is its equivalent circuit for a duplexer designed in accordance with another embodiment of the present invention. Figure 6 and Fig. 7A-7K show examples of new equivalent circuits and printed patterns, as applied to a duplexer. The duplexer of Fig. 6 and Figs. 7A-7B has eight (8) transmission poles 20, Θ1, Θ2, Θ3 and Θ4 and three (3) trap resonators, 40 on each end of the duplexer and Θ1 resonator, but it can work as a filter with nine (9) transmission poles including Θ1, and three (3) trap resonators, also including Θ1. In most cases, the higher band is the receiver band and the lower band is the transmitter band at the mobile phone terminal sides. These designations become reversed at the base station sides. However, it is noted that the relationship of the receiver band and the transmitter band, on the one hand, and the higher/lower bands on the other hand are not always consistent.

p. 8, Insert these paragraphs after paragraph beginning with "Figures 7C-7K" from previous amendment:

In particular, Figures 7C-7K allow for the concept of a resonator θ1 working as both a transmission pole and as a trap resonator. Such a resonator θ1 allows for a duplexer that requires minimal space. The resonator θ1 acts as a transmission pole and as a trap resonator because of the unique relationship between the capacitances of coupling, C1, C2 and C3, in the manner as is described for Figures 4B and 7B above. The unique pattern of the duplexers allow for the resonator θ1 to act as both a trap resonator and a transmission pole. In particular, Figure 7C-7K show that using the inventive patterns taught in the present application, one may vary the number of transmission poles and trap holes as desired and still obtain a duplexer that is smaller in size than traditional duplexers because of a resonator acting as a trap hole and trap resonator.

Figure 7C and corresponding equivalent circuit in Figure 7D show 8 transmission poles 20 and a resonator θ1, which acts as both a transmission pole and a trap resonator due to the relationship of capacitance couplings C1, C2 and C3 and inductance Z. Figure 7E and

corresponding equivalent circuit in Figure 7F show 7 transmission poles 20, a trap resonator 40 and a resonator θ1, which acts as both a transmission pole and a trap resonator due to the relationship of capacitance couplings C1, C2 and C3 and inductance Z. Figure 7G and corresponding equivalent circuit in Figure 7H show 5 transmission poles 20, 2 trap resonators 40 and resonator θ1, which acts as both a transmission pole and a trap resonator due to the relationship of capacitance couplings C1, C2 and C3 and inductance Z. Figure 7J and corresponding equivalent circuit in Figure 7K show 5 transmission poles 20, a trap resonator 40 and a resonator θ1, which acts as both a transmission pole and a trap resonator due to the relationship of capacitance couplings C1, C2 and C3 and inductance Z.

It should be noted that couplings C1, C2 and C3 work in a manner similar to that described for Figure 4B above to allow for resonator θ1 to work as both a transmission pole and a trap resonator to allow for a reduced-size duplexer.

p. 8, Insert these paragraphs after paragraph beginning with "Figure 8A" from previous amendment:

In particular, Figure 8A shows resonators θ1, θ2 and θ3, with θ1 acting as both a transmission pole and a trap resonator because of the relationship between C1, C2 and C3 as described above.